

# OUTPUT PENTODE

# EL85

Output pentode rated for 6W anode dissipation intended for use in mobile equipment as a r.f. amplifier at frequencies up to 120Mc/s or as an a.f. output valve.

## HEATER

$V_h$	6.3	V
$I_h$	200	mA

## CAPACITANCES

$C_{a-g1}$	<0.2	pF
$C_{in}$	4.3	pF
$C_{out}$	5.1	pF

## CHARACTERISTICS

$V_a$	200	225	250	V
$V_{g2}$	200	225	250	V
$I_a$	22.5	26	24	mA
$I_{g2}$	3.6	4.1	4.1	mA
$V_{g1}$	-9.4	-10.8	-13.5	V
$g_m$	3.2	3.2	3.1	mA/V
$r_a$	90	90	100	k $\Omega$
$\mu_{g1-g2}$	11	11	11	

## OPERATING CONDITIONS AS SINGLE VALVE CLASS "A" AMPLIFIER

$V_a$	200	225	250	V
$V_{g2}$	200	225	250	V
$R_k$	360	360	470	$\Omega$
$V_{g1}$	-9.4	-10.8	-13.5	V
$I_a$	22.5	26	24	mA
$I_{g2}$	3.6	4.1	4.1	mA
$R_a$	9.0	9.0	11	k $\Omega$
$V_{in(r.m.s.)}$ ( $P_{out} = 50mW$ )	800	800	700	mV
$P_{out}$	2.0	2.6	2.55	W
$V_{in(r.m.s.)}$	6.4	7.2	7.5	V
$D_{tot}$	10	10	10	%

## OPERATING CONDITIONS FOR TWO VALVES IN CLASS "AB" PUSH-PULL (Cathode bias)

$V_a$	200	250	V
$V_{g2}$	200	250	V
$I_{a(o)}$	$2 \times 16$	$2 \times 20$	mA
$I_a$ (max. sig.)	$2 \times 17.5$	$2 \times 22.1$	mA
$I_{g2(o)}$	$2 \times 2.9$	$2 \times 3.3$	mA
$I_{g2}$ (max. sig.)	$2 \times 4.4$	$2 \times 7.1$	mA
* $R_k$	310	310	$\Omega$
$R_{a-b}$	12	12	k $\Omega$
$P_{out}$	4.0	6.8	W
$V_{in(g1-g1)r.m.s.}$	19	24.4	V
$D_{tot}$	4.5	5.4	%

\*Common cathode bias resistor.

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### OPERATING CONDITIONS FOR TWO VALVES IN CLASS "B" PUSH-PULL (Fixed bias)

$V_a$	200	250	V
$V_{g2}$	200	250	V
$V_{g1}$	-17.5	-23	V
$I_{a(0)}$	$2 \times 5.0$	$2 \times 5.0$	mA
$I_a$ (max. sig.)	$2 \times 15$	$2 \times 19$	mA
$I_{g2(0)}$	$2 \times 0.8$	$2 \times 0.9$	mA
$I_{g2}$ (max. sig.)	$2 \times 5.0$	$2 \times 7.3$	mA
$R_{a-a}$	16	16	k $\Omega$
$P_{out}$	3.9	6.8	W
$V_{in(g1-g1)r.m.s.}$	24.4	32	V
$D_{tot}$	3.5	4.3	%

$P_{out}$  and  $D_{tot}$  are measured with fixed bias and therefore represent the power output available during the reproduction of speech and music. When a sustained sine wave is applied to the control-grid the bias across the cathode resistor will readjust itself as a result of the increased anode and screen-grid currents. This will result in approximately 10% reduction in power output.

### R.F. OPERATING CONDITIONS FOR SINGLE VALVE, CLASS "C"

#### R.F. amplifier

$f$	50	100	Mc/s
$V_a$	300	300	V
$V_{g2}$	175	175	V
$V_{g1}$	-30	-30	V
$I_a$	19.8	20.2	mA
$I_{g2}$	4.1	3.9	mA
$I_{g1}$	1.1	0.9	mA
$P_{load}$	3.8	3.1	W
$\eta_{load}$	64	51	%

#### Frequency doubler

$f_{out}$	50	100	Mc/s
$V_a$	300	300	V
$V_{g2}$	175	175	V
$V_{g1}$	-60	-60	V
$I_a$	19.8	20.3	mA
$I_{g2}$	3.7	3.5	mA
$I_{g1}$	1.5	1.2	mA
$P_{load}$	2.7	2.0	W
$\eta_{load}$	45	33	%

#### Frequency trebler

$f_{out}$	50	100	Mc/s
$V_a$	300	300	V
$V_{g2}$	175	175	V
$V_{g1}$	-100	-100	V
$I_a$	19.6	20	mA
$I_{g2}$	3.6	3.4	mA
$I_{g1}$	1.8	1.6	mA
$P_{load}$	2.1	1.7	W
$\eta_{load}$	36	28	%

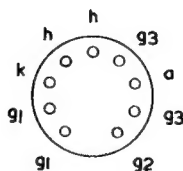
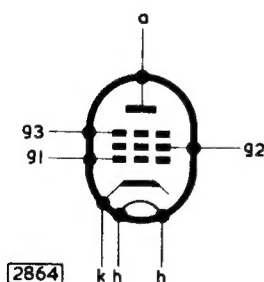
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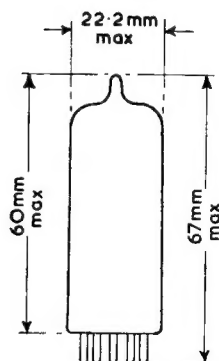
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## LIMITING VALUES

$V_{a(h)}$ max.	550	V
$V_a$ max.	300	V
$p_a$ max.	6.0	W
$V_{g2(b)}$ max.	550	V
$V_{g2}$ max.	300	V
$p_{g2}$ max. (zero sig.)	1.0	W
$p_{g2}$ max. (max. sig. speech and music)	2.0	W
$-V_{g1}$ max.	100	V
$-V_{g1(pk)}$ max.	250	V
$V_{g1}$ max. ( $I_{g1} = +0.3\mu A$ )	-1.3	V
$I_k$ max. (a.f. operation)	35	mA
$I_k$ max. (r.f. operation)	25	mA
$R_{g1-k}$ max.	2.0	M $\Omega$
$V_{h-k}$ max.	100	V
$R_{h-k}$ max.	20	k $\Omega$

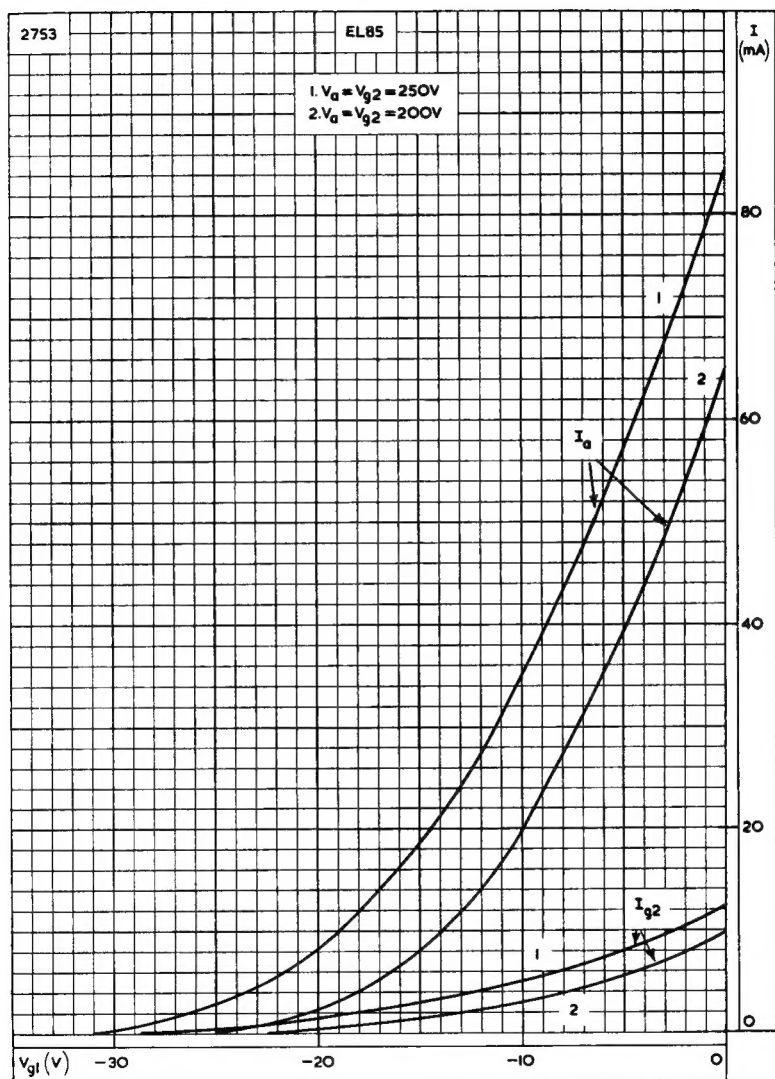


B9A Base



FOR R.F. APPLICATIONS IT IS RECOMMENDED THAT PINS 1 AND 2 SHOULD BE STRAPPED TOGETHER AND PINS 6 AND 8 BE CONNECTED SEPARATELY TO THE CHASSIS

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ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST CONTROL-GRID VOLTAGE